Discussion of "Central Bank Digital Currency, Credit Supply, and Financial Stability" by Young Sik Kim and Ohik Kwon

Heon Lee

Department of Economics
University of Missouri

KIEA Annual Meeting, Dec. 20, 2019

Motivation of The Paper

- A lot of discussions on issuing Central Bank Digital Currency (CBDC)
  - e.g., E-krona by Swedish Riksbank.
- Many recent studies on CBDC:
  - Williamson (2019), Andolfatto (2018), Keister & Sanches (2019), Davoodalhosseini (2018), Chiu, Davoodalhosseini, Jiang & Zhu (2019)
- Studies on financial stability are rare. This paper focuses on effect of introducing CBDC on financial stability.

What is CBDC?

Table 1: Property of CBDC from Keister & Sanches (2019)

	Cash	Reserve	CBDC
a liability of the central bank	✓	✓	✓
in electronic form	X	✓	✓
can be held by anyone	✓	X	✓

Brief Summary

- Based on Champ, Smith & Williamson (1996)
- Key ingredients in the model
  - commercial bank account: limited communication problem
  - cash: can be verified in all locations
  - CBDC: can be verified in all locations
- Two types of agent, borrow and lender.
- A bank receives deposit and lends loan.
- If lenders have deposit account, π fraction of lenders withdraw cash where $\pi \sim F(\pi)$.
- High $\pi \Rightarrow$ more cash withdrawal
- $\exists!$ critical point π^* s.t. $\pi > \pi^* \Rightarrow$ bank panic

Brief Summary

- CBDC and commercial bank deposit account are substitute.
  - $\Rightarrow$ Some fraction (θ) of depositors have CBDC account at the central bank not at the commercial bank's deposit account.
  - $\Rightarrow$ Increase in CBDC account in the central bank crowds out deposit account in the commercial bank.
- But borrowers' optimal decision i.e., demand for loan stays same.

$$l_t = \frac{y}{(1+\beta)R_t}$$

Brief Summary

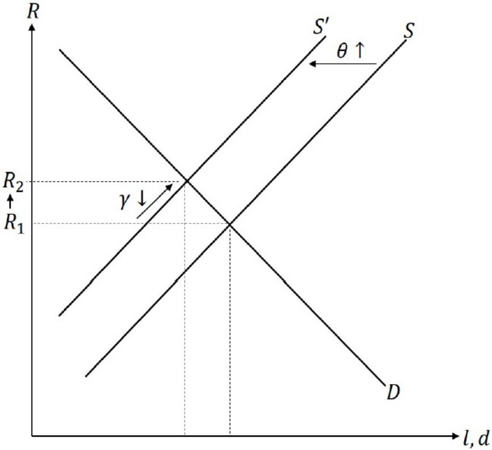


Figure 2: Equilibrium in the private credit market

Brief Summary

- Introducing CBDC increases the likelihood of banking panic
  - $\partial\pi^*/\partial\theta < 0$
- Introducing reserve requirement does not change results.
- Wholesale CBDC for commercial banks instead of retail CBDC for depositor have different results (identical to IOR policy)
  - "an increase in the interest on reserves can indeed improve financial stability by lowering the probability of bank panic, but at the expense of credit contraction."
- Central bank's lending
  - $\partial\pi_t^{c*}/\partial\theta > 0$
  - introducing CBDC lending is welfare improving

Comment 1: Market Structure

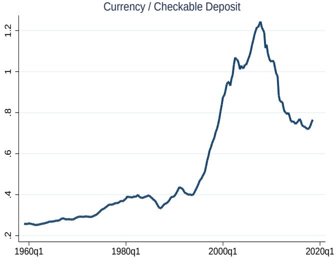
- In this paper, introducing CBDC decreases supply of private credit.
- In Chiu et al. (2019), however, introducing CBDC increases supply of private credit.
- Where these difference comes from?
  - Chiu et al. (2019) has imperfect competition of banking (Cournot competition). Introducing CBDC reduces banks' market power. $\Rightarrow$ supply of private credit increases
  - In this paper, banking is competitive.
- Effect of introducing CBDC may depend on market structure.

Comment 2: Central Bank Lending

- central bank lends to bank in Section 4
- lender $\rightarrow$ central bank $\rightarrow$ commercial bank $\rightarrow$ borrower
- central bank as financial intermediary?
- what is different between direct lending from central bank indirect lending intermediated by banks?

Comment 3: Cashless Economy ($\theta \to 1$)

- As $\theta \to 1$, all depositors have CBDC account
- no withdrawal $\Rightarrow$ use of cash $\to 0$
- In the real economy, still there is a huge demand for cash.
  - in 2000s, more cash than demand deposit.
  - Rogoff (2017), Williamson (2019) "strong demand for currency is explained primarily by crime"
- CBDC as a substitute for deposit is analyzed in the model.
- CBDC as a substitute for physical currency can be another challenge for the future of CBDC.



References

Andolfatto, D. (2018), 'Assessing the impact of central bank digital currency on private banks', *FRB St. Louis Working Paper* (2018-25).

Champ, B., Smith, B. D. & Williamson, S. D. (1996), 'Currency elasticity and banking panics: Theory and evidence', *Canadian Journal of Economics* pp. 828–864.

Chiu, J., Davoodalhosseini, S. M., Jiang, H. J. & Zhu, Y. (2019), 'Central bank digital currency and banking', *Available at SSRN 3331135* .

Davoodalhosseini, S. M. (2018), 'Central bank digital currency and monetary policy'.

Keister, T. & Sanches, D. (2019), 'Should central banks issue digital currency?', *White Pap* pp. 19–26.

Rogoff, K. S. (2017), *The curse of cash: How large-denomination bills aid crime and tax evasion and constrain monetary policy*, Princeton University Press.

Williamson, S. (2019), Central bank digital currency: Welfare and policy implications, *in* '2019 Meeting Papers', number 386, Society for Economic Dynamics.